

PATENT CLAIMS

1. A connector device (10, 30, 40) for the detachable
connection of at least one optical waveguide to at
least one optoelectronic component (12), which is
arranged and electrically contacted as a chip
directly on the surface of a support, in particular
a circuit board (11), and has an optical axis
perpendicular to the support or circuit board (11),
characterized in that the optical waveguide is
provided at the end to be connected with a
standardized fiber-optic plug connector (20, 32,
42), in that the connector device (10, 30, 40)
comprises a base part (15), which is fastened on
the surface of the support or the circuit board
(11), surrounds the optoelectronic component (12)
and has a drilled through-hole (45, 46) for the
optical signals to be exchanged between the optical
component (12) and the optical waveguide, and in
that the connector device (10, 30, 40) comprises a
coupling part (17, 26, 37), which connects to the
base part (15) facing outward and is fastened to
the base part (15), and has an insertion opening
(18, 28, 38) for the insertion of the standardized
fiber-optic plug connector (20, 32, 42).
2. The connector device as claimed in claim 1,
characterized in that the base part (15) comprises
a preferably rectangular plate (52) which extends
transversely to the direction of insertion of the
fiber-optic plug connector (20, 32, 42), can be
connected on one side to the coupling part (17, 26,
37) and has on the other side an adapter (14, 14',
14'') with which the base part (15) can be placed
onto the support or the circuit board (11).
3. The connector device as claimed in claim 2,
characterized in that the standardized fiber-optic

- 17 -

5 plug connector (20, 32, 42) has a ferrule (21, 31, 39) in which the optical waveguide ends, and in that, for receiving the ferrule (21, 31, 39) when the plug connector (20, 32, 42) is inserted on the base part (15), a ferrule holder (16) into which the drilled through-hole (45, 46) in the base part (15) opens out is provided on the side of the plate (52) opposite from the adapter (14, 14', 14'').

10 4. The connector device as claimed in claim 3, characterized in that the ferrule holder (16) protrudes into the coupling part (17, 26, 37).

15 5. The connector device as claimed in either of claims 3 and 4, characterized in that the adapter (14, 14', 14'') and the ferrule holder (16) are part of a one-piece insert (53) which is inserted into the plate (52) of the base part (15).

20 6. The connector device as claimed in claim 5, characterized in that the insert (53) is produced from a metal, and in that the plate (52) is produced from a plastic.

25 7. The connector device as claimed in claim 5, characterized in that the insert (53) and the plate (52) are united in a one-piece element and produced from a plastic.

30 8. The connector device as claimed in one of claims 5 to 7, characterized in that the drilled through-hole (45, 46) inside the insert (53) runs between the adapter (14, 14', 14'') and the ferrule holder (16).

35

9. The connector device as claimed in one of claims 5 to 8, characterized in that means (13, 47, 50) for focusing light rays passing between the

- 18 -

optoelectronic component (12) and the optical waveguide are arranged in the insert.

10. The connector device as claimed in claim 9,
5 characterized in that the focusing means comprise a lens (13, 47).
11. The connector device as claimed in claim 10,
10 characterized in that the lens (13) is arranged at the entry of the drilled through-hole (45).
12. The connector device as claimed in claim 9,
characterized in that the focusing means comprise a focusing reflective surface (50).
15
13. The connector device as claimed in one of claims 2 to 12, characterized in that the plate (52) of the base part (15) is arranged parallel to the support or the circuit board (11), and in that the drilled
20 through-hole (45) and the insertion opening (18, 28, 38) run in the direction of the optical axis of the optoelectronic component (12).
14. The connector device as claimed in claim 13,
25 characterized in that the adapter (14, 14') is formed in a hollow-cylindrical manner.
15. The connector device as claimed in one of claims 2 to 12, characterized in that the plate (52) of the
30 base part (15) is arranged perpendicular to the support or the circuit board (11), in that the drilled through-hole (45) and the insertion opening (18, 28, 38) run parallel to the circuit board (11), and in that means (47, 48, 50) for the
35 orthogonal deflection of the light rays passing between the optoelectronic component (12) and the optical waveguide are provided in the adapter (14'').

16. The connector device as claimed in claim 15,
characterized in that the deflecting means comprise
a hemispherical lens (47), which simultaneously
5 deflects and focuses the light rays.
17. The connector device as claimed in claim 15,
characterized in that the deflecting means
comprises a planar reflective surface (48).
- 10 18. The connector device as claimed in claim 15,
characterized in that the deflecting means comprise
a focusing reflective surface (50).
- 15 19. The connector device as claimed in one of claims 1
to 18, characterized in that the optoelectronic
component (12) is a Vertical Surface Cavity
Emitting Laser (VCSEL).
- 20 20. A method for the assembly of a connector device as
claimed in one of claims 1 to 19, characterized in
that the base part (15) is first aligned with the
optical axis of the optoelectronic component (12),
and in that the base part (15) is fixed in the
25 aligned state on the support or the circuit board
(11).